5 Photo Scanning Tips

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http://bit.ly/PH3974scan

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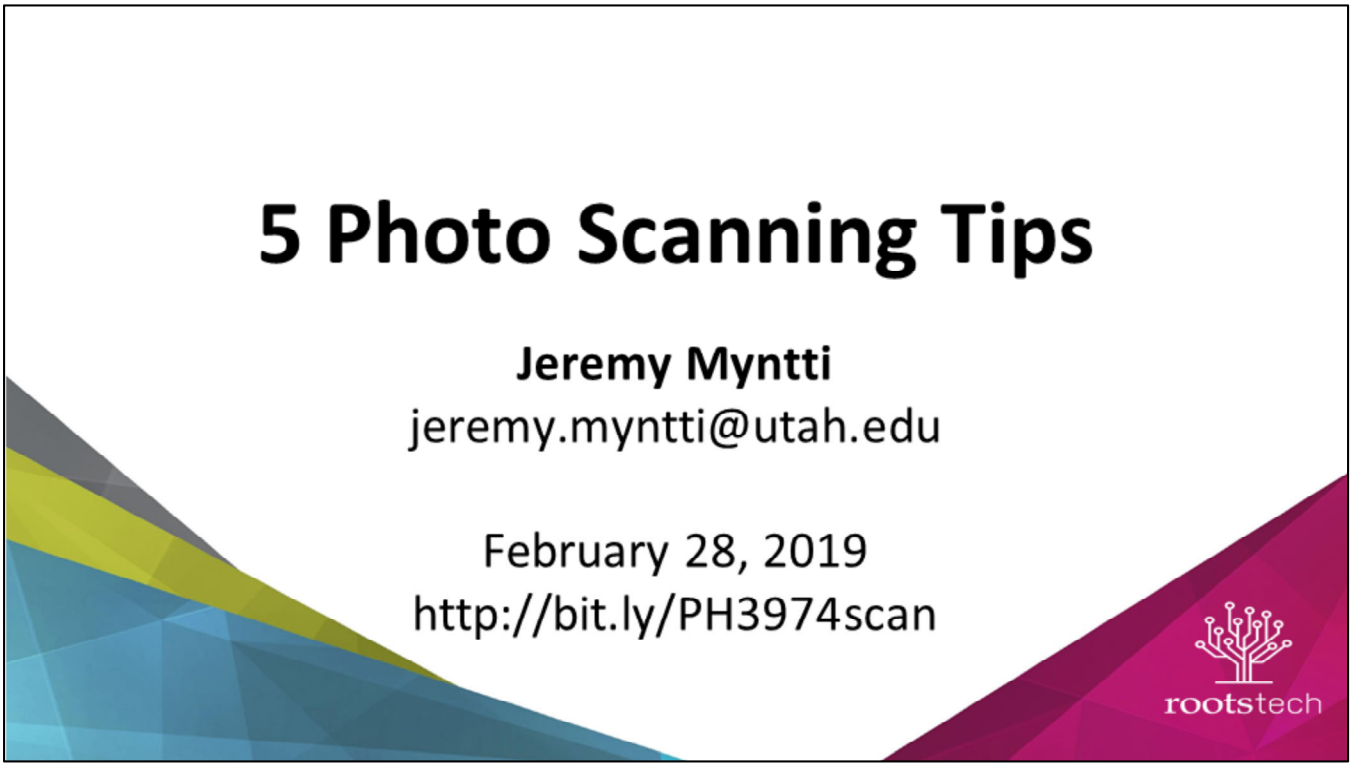
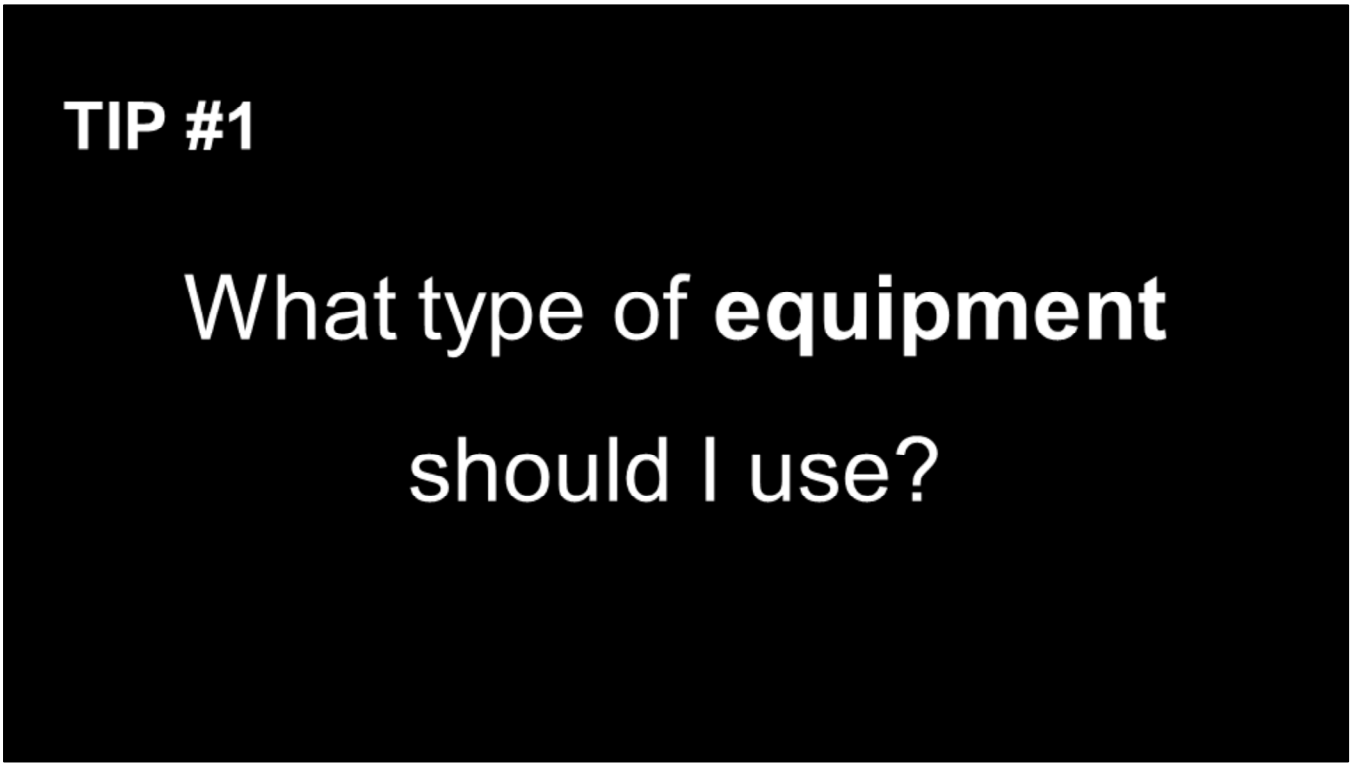


I am Jeremy Myntti, Head of Digital Library Services at the University of Utah Marriott Library. In this position, I have the privilege of working closely with many people at the University as well as many partner institutions across the state who are working to digitize their collections for preservation and to make them available online.

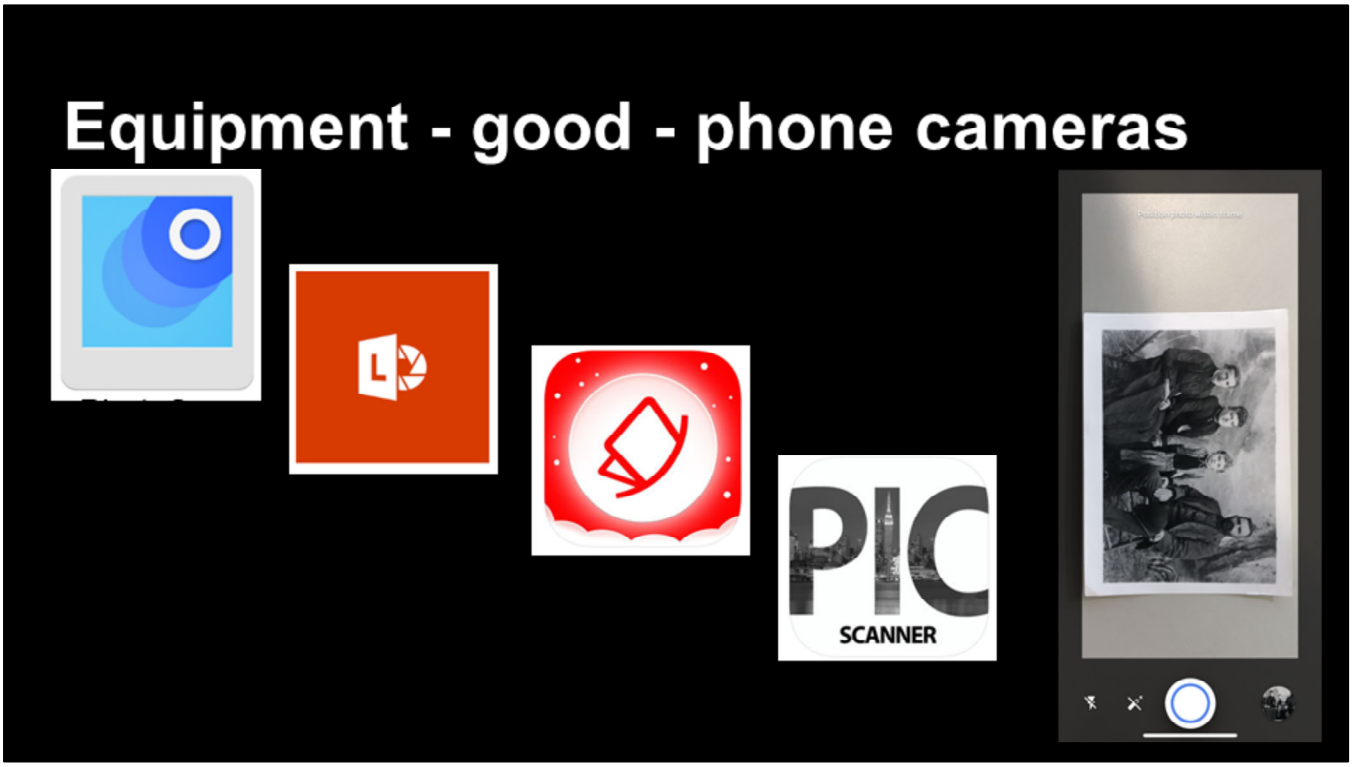
At the bottom of this slide, there is a link where you can download my slides if you are interested in reviewing them again later.

1. The 5 photo scanning tips that I'm going to share in this presentation are about
    a. The types of equipment you can use to scan photographs
    b. Why you need to worry about the scanning resolution
    c. What is bit depth
    d. How should you name your files
    e. What file format should you use



TIP #1 - What type of scanning equipment should I use to scan photographs?

I’m going to split scanning equipment into three categories: good, better, and best.



Let’s start with the good.

You can use the camera on your smartphone as a scanner with several different apps that are freely available, such as Google’s Photoscan, Photomyne, Office Lens from Microsoft, or PIC Scanner.

The image on the right side of this slide is an example where I was scanning a photograph using Photoscan on my iPhone. This creates a pretty good scanned image, but you need a very steady hand, a nice flat surface, and good lighting with no shadows to get a good quality image.

You can see a shadow of my hands holding my phone at the bottom of the photograph and the corners of the photo are warped a bit, making the edges curve.

While this option might not produce the highest quality image, it is convenient because you can scan photographs wherever you take your phone, like if you were visiting a relative and looking through their old photo albums.

A better option would be to invest in a low end scanner such as these.

This type of scanner can be bought anywhere that electronics are sold, and you can often find good quality scanners for less than $100.

Before purchasing one of these types of scanners, you should make sure that the scanner has all of the options that you need for your intended use, such as do you want to scan only photos or also slides and negatives.

For the majority of purposes, these types of scanners will work just fine for you.

The best option is to use a high end scanner or camera.

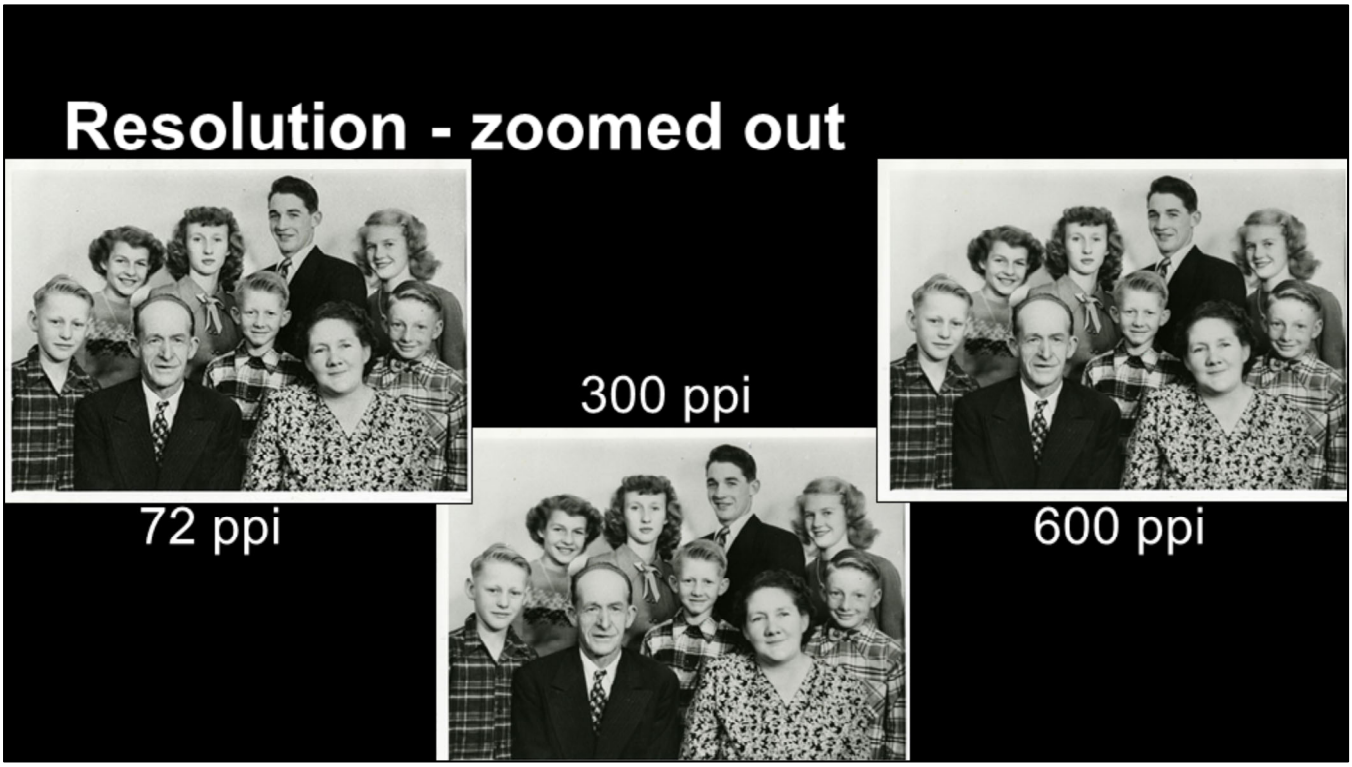
These types of scanners can cost several hundred to several thousand dollars, so you should figure out if the additional quality and scanning options are worth the higher cost for your intended use.

These types of scanners can usually scan many more formats than the less expensive options.

Since buying a scanner like this can be cost prohibitive, most public or academic libraries as well as family history centers and FamilySearch have this type of equipment available for you to use for free.

Tip #2 answers the question what is resolution?

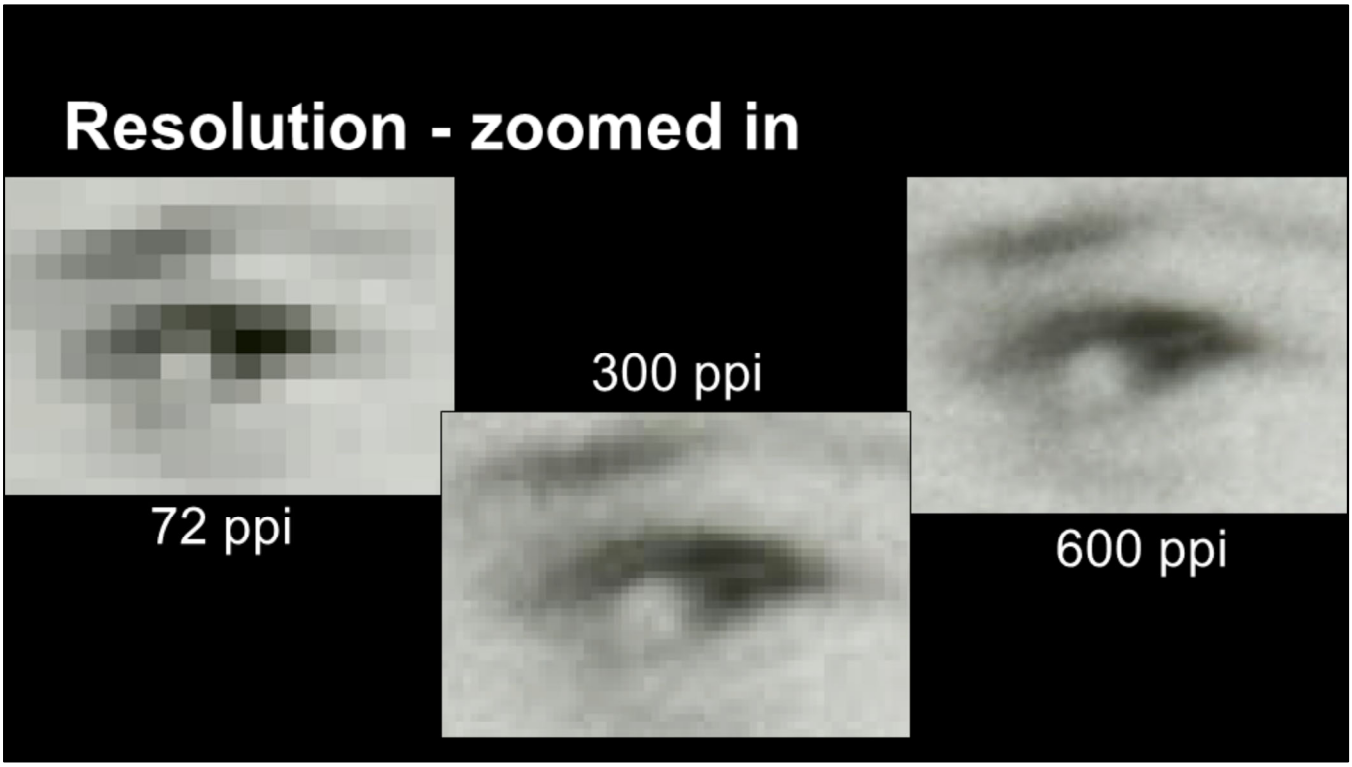
Resolution refers to the number of pixels or little dots that make up the image on a digital screen and it is measured in the number of pixels per inch, or PPI.



Here is the same photograph scanned at 72, 300, and 600 PPI.

You might be looking at this and thinking that there is no difference between any of these scans, so why does resolution matter?

My grandma is the young lady in the top right corner of this photo, so let’s zoom in closely on her eye.



Now you can hopefully tell the difference in these different resolutions.

With 72 ppi and grandma’s eye covering about a quarter inch, there are only 18 pixels across that can represent her eye in the scanned image.

In the 600 ppi version, there are 150 pixels across her eye so the quality is much higher.

If you are scanning photos to share online, 72 ppi is often good enough.

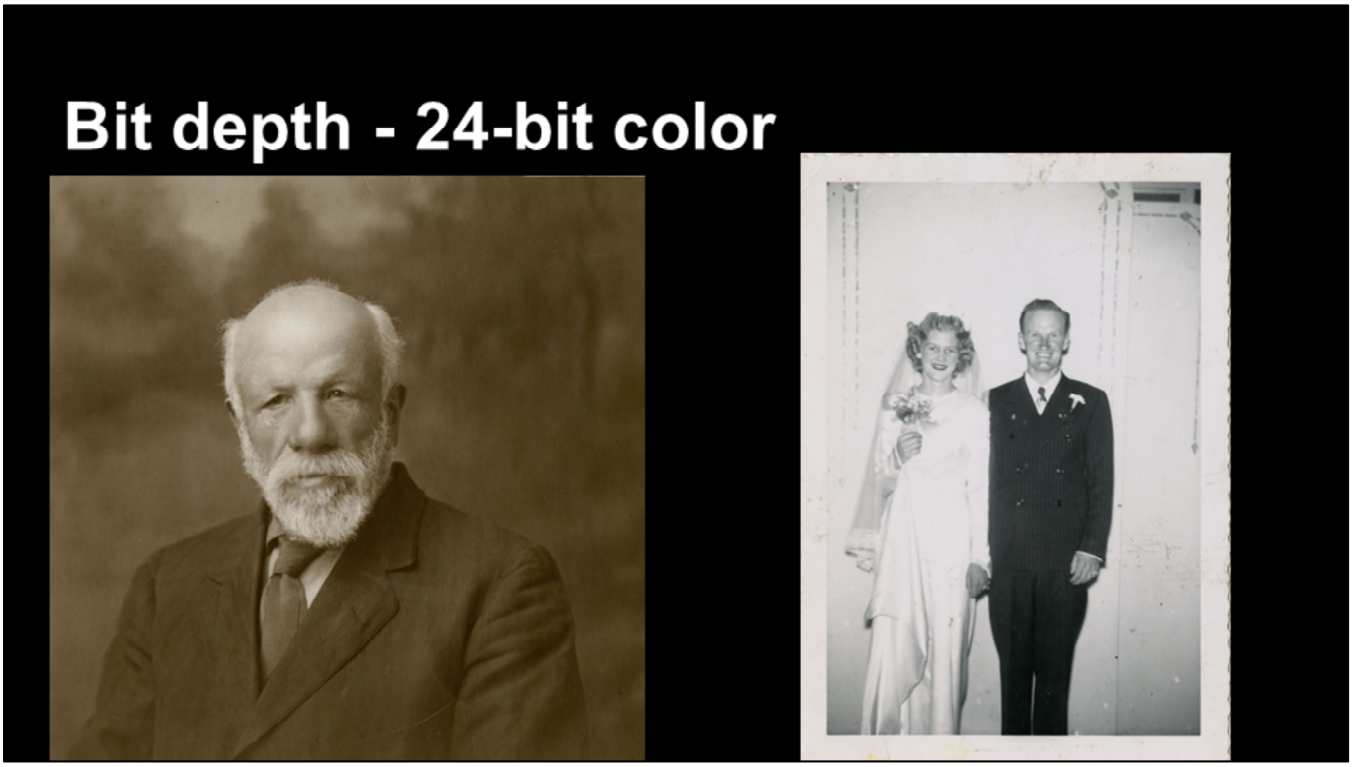
If you want high quality images that you can print or preserve, you will want to use a higher resolution like 600 ppi.

Tip #3 – What is bit depth?

Bit depth refers to the number of colors that can be used to represent each pixel in the scanned image.

Think of bit depth as your box of crayons. Did you buy the cheap pack with only 12 colors, or did you buy the large case with hundreds of different colors?

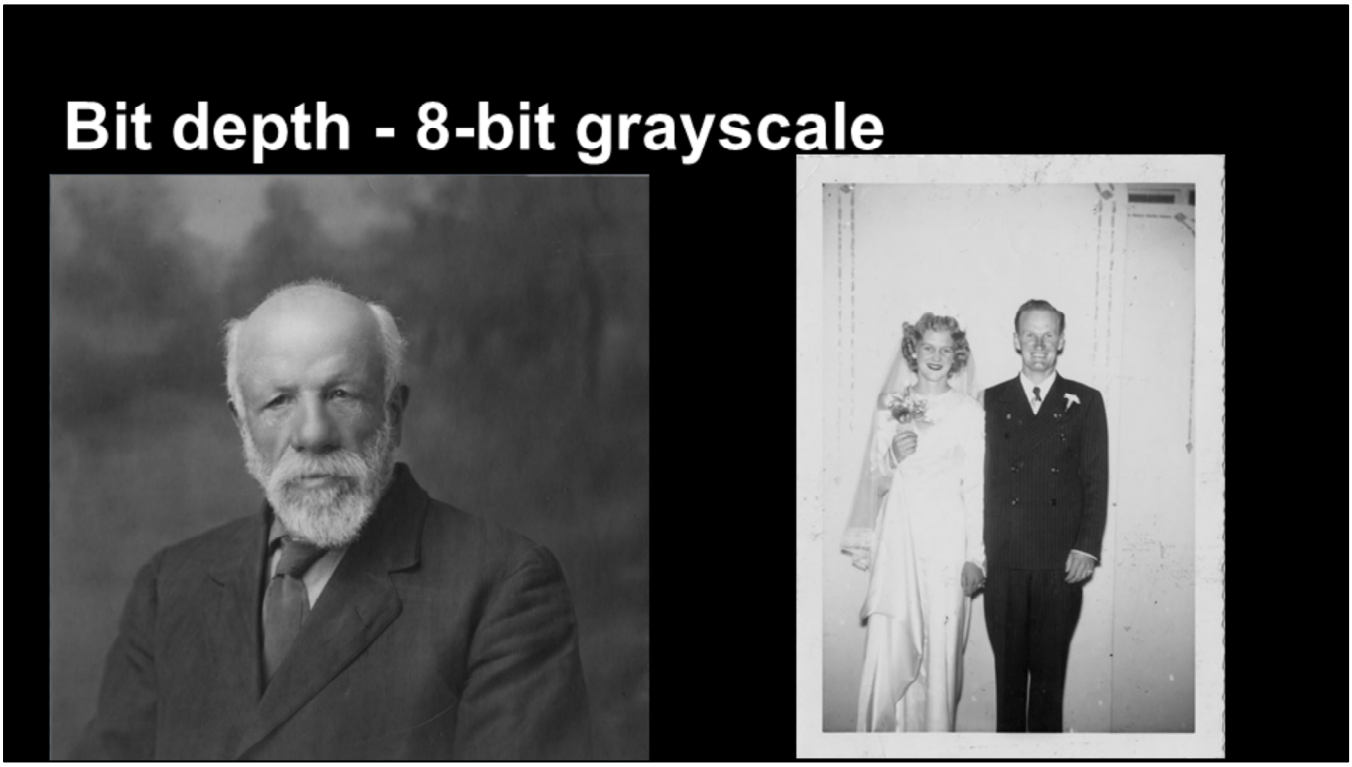
I’m going to show examples of three different bit depths: 24-bit, 8-bit, and 1-bit.



First let’s look at a 24-bit color image.

There are over 16 million different colors that can represent each pixel in the scanned image.

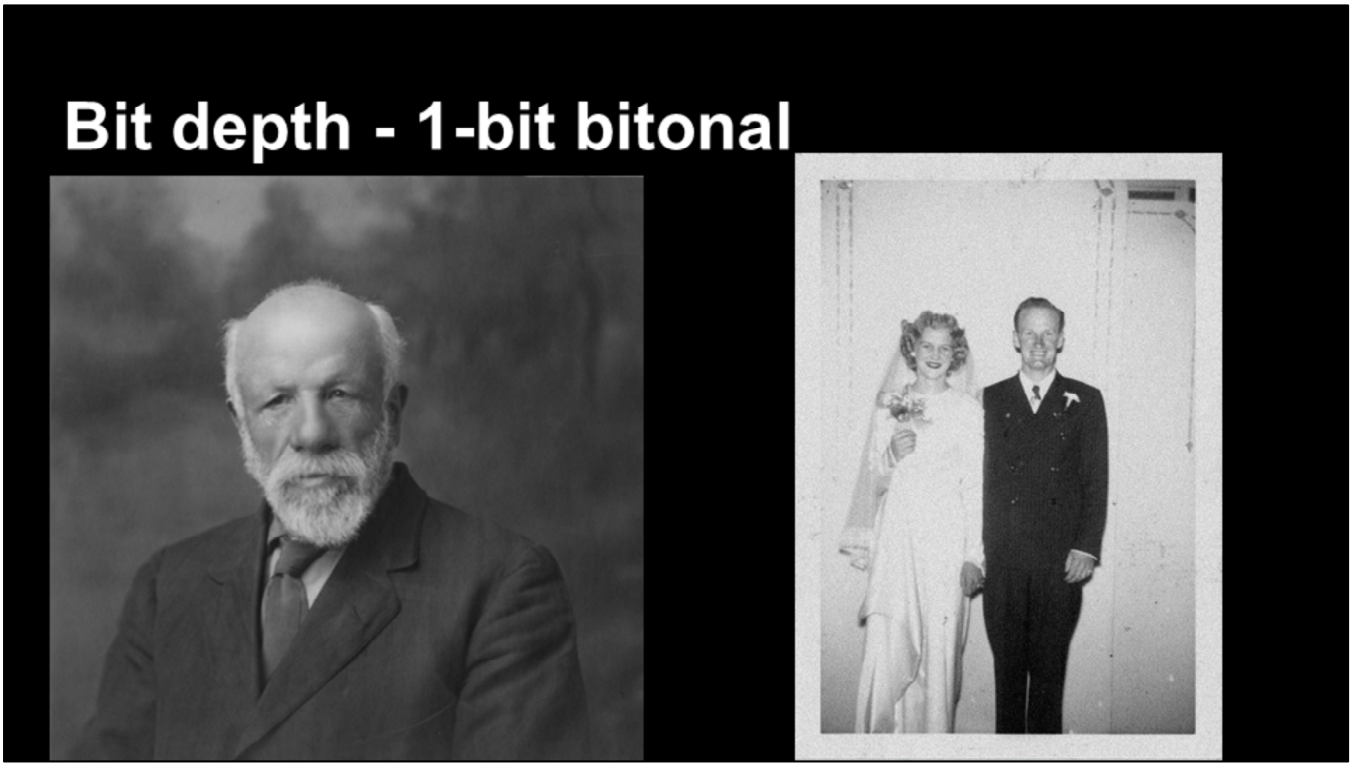
Since the human eye can only detect around 10 million colors, scanning in 24-bit color generally produces a very accurate representation of the original photograph.



The next most common bit depth is 8-bit grayscale.

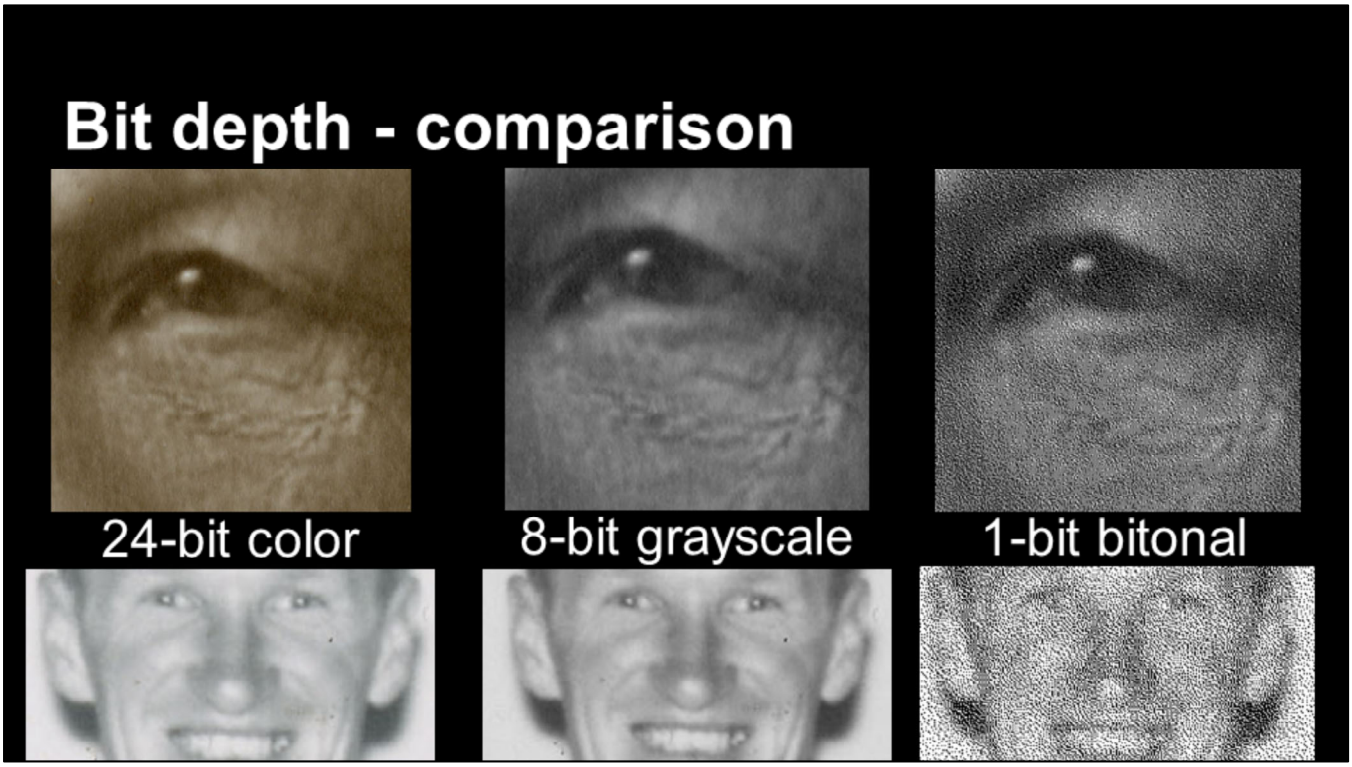
With 8-bit, there are 256 shades of gray, ranging from pure black to pure white and everything in between.

You can tell a pretty big difference between 24-bit and 8-bit in the photograph of my wife's great grandfather on the left, but the photograph of my grandparents on their wedding day looked nearly identical between the two.



Now let’s look at 1-bit bitonal. With 1-bit, every pixel has to be either pure black or pure white.

You might not have seen much of a change between 8-bit and 1-bit in the photo on the left, but hopefully you noticed a significant change in the wedding photo.



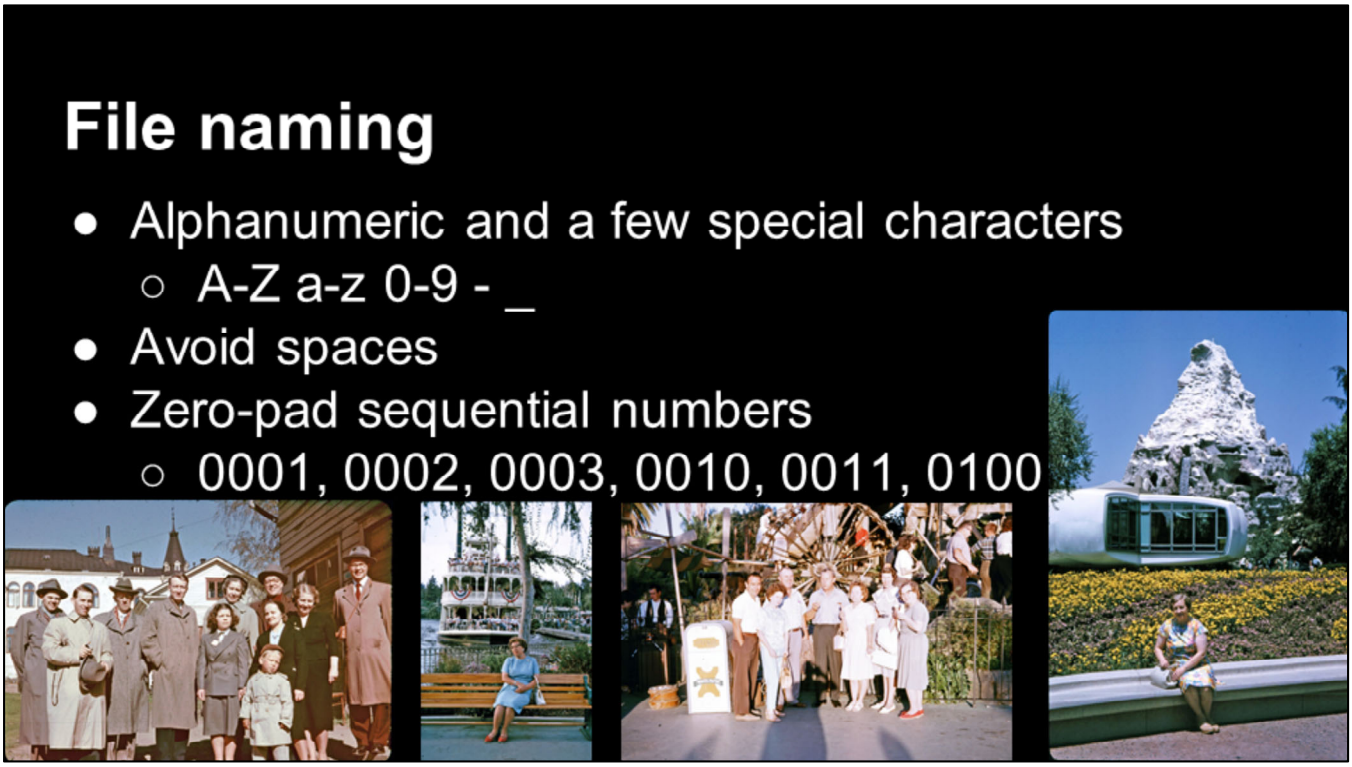
If we zoom in on these photos at each bit depth, you can see the quality difference.

For photographs, I would recommend that you never use 1-bit bitonal since the image quality is very poor.

When possible, I would recommend scanning most photographs in 24-bit color so you can pick up all variations in color and tone that you might not be able to with 8-bit grayscale.

The fourth tip is about how to name your files that you scan.

A high level tip for creating file names is to be descriptive and consistent so you and others can understand what the files are now and in the future.



I recommend only using alphanumeric characters (so upper and lower case letters and numbers) and only a couple special characters such as a hyphen or underscore.

Most other special characters like slashes, asterisk, or others, will mean something different to different systems, so avoid them at all costs.

It is best to avoid spaces since not all computers will treat a space in a filename the same.

If you have multiple photos with the same filename, such as these three photos of my grandma in Disneyland in the 1960s, you can make them unique by adding a sequential number to the end.

You should zero-pad these numbers so the computer will always sort them in the correct order.

With these numbers, if they weren't all four digits with zeros filling in the blanks, some computers might sort these as 1, 10, 100, 11, 2, 3.

I like to use dates in my file names so I know when the original photo was taken. When you use a date, you should use the format year, month, day, either with or without hyphens. That way, the computer will sort the files in chronological order.

I like to use a short piece of descriptive text in my filename so I can easily see what the photo is without needing to open it.

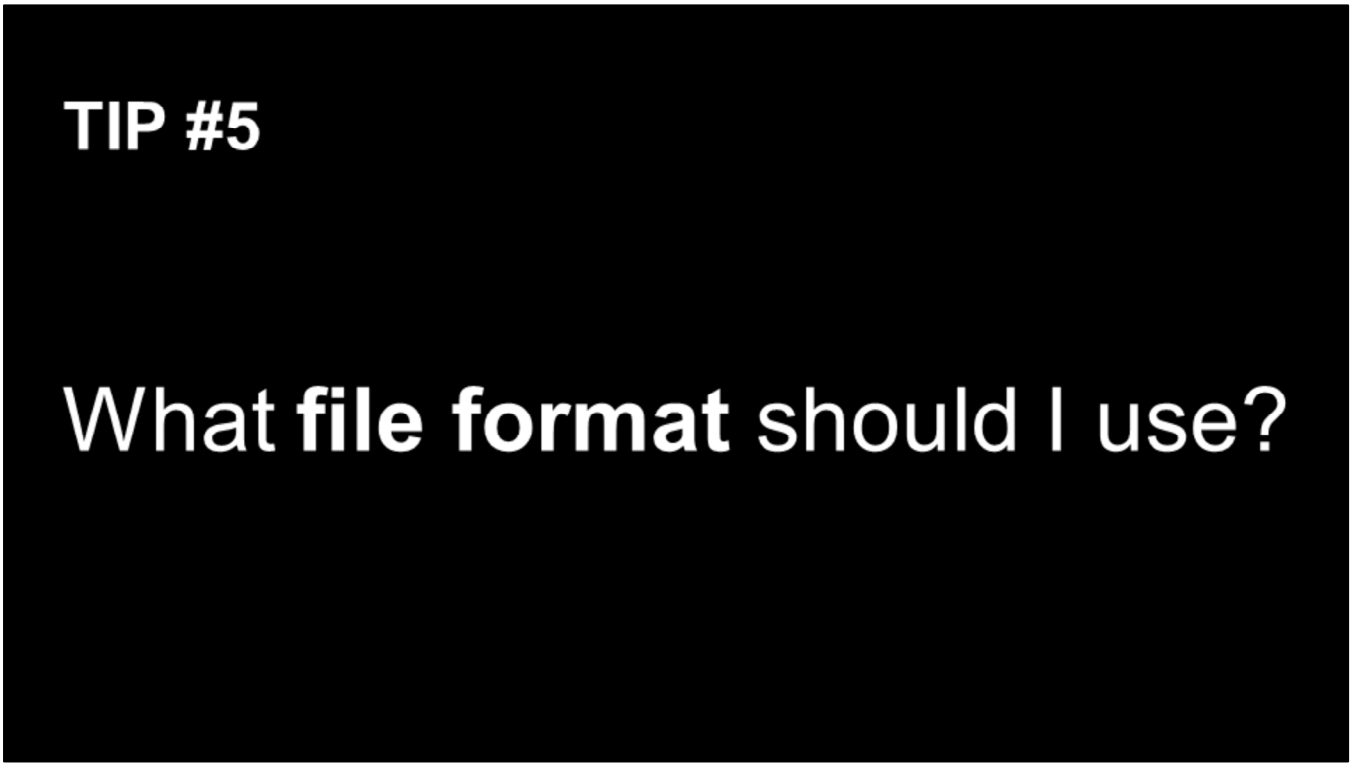
This example here, VuorinenLaurillmari_headstone, could be used to describe the middle photo of my great grandfather's headstone.

Here are a couple of good and not so good examples.

In the good examples, you can see that I have used dates with the year, month, and day, then an underscore followed by some descriptive text, and then the first one has a four-digit number.

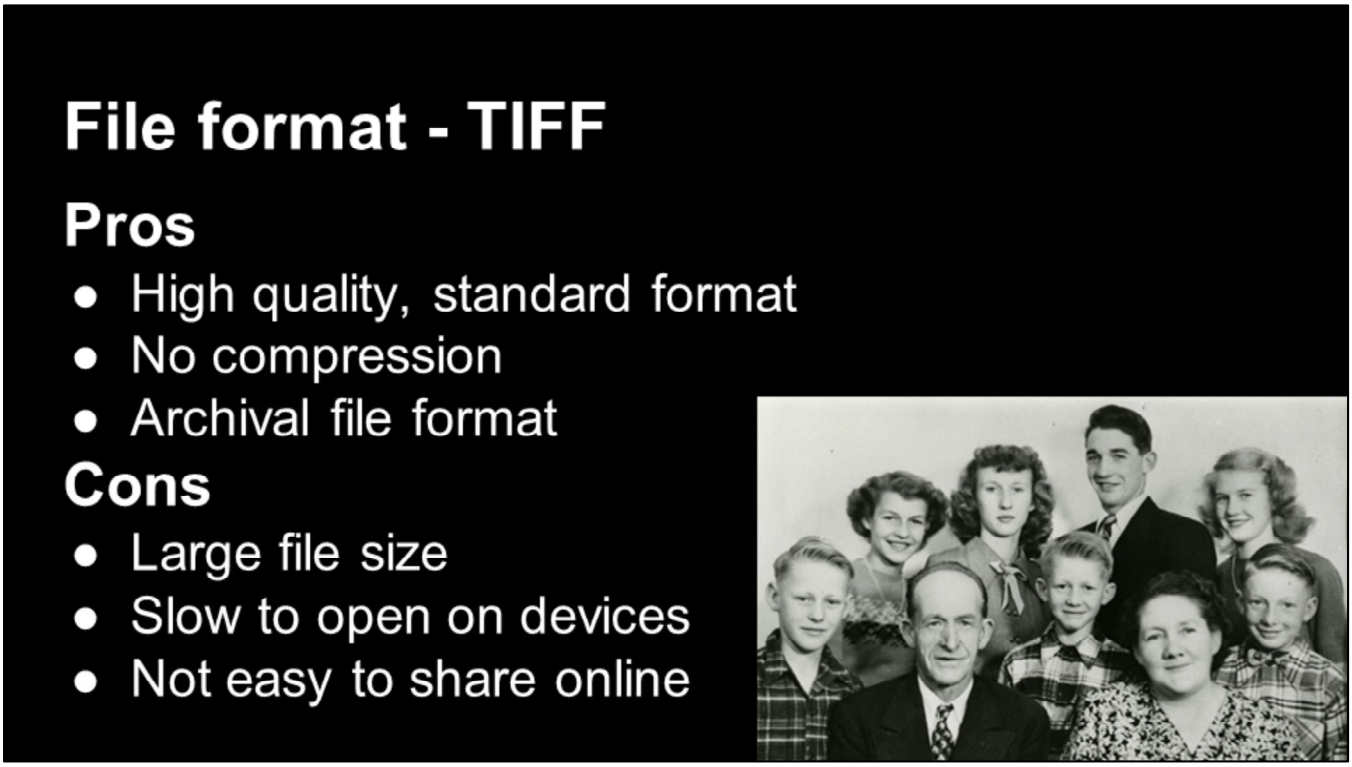
The second filename, 1953-07-26_Mynttis-on-Gripsholm.jpg could describe the photo you see here of my dad as a four year old boy with his sisters and parents as they are on the Gripsholm, immigrating to America from Finland on July 26, 1953.

In the not so good examples, hopefully you can see why these might not be the greatest, since the first one is only a date and time so you have no idea what the photo really is, the second one is so short that the filename tells you nothing, and the third one doesn't use a standardized date format, so the computer wouldn't be able to sort multiple files in chronological order.



The final tip I want to share is about the file formats you can use when scanning photos.

There are many possible file formats that you could use. I'm only going to talk about two of the most common – TIFF and JPEG.

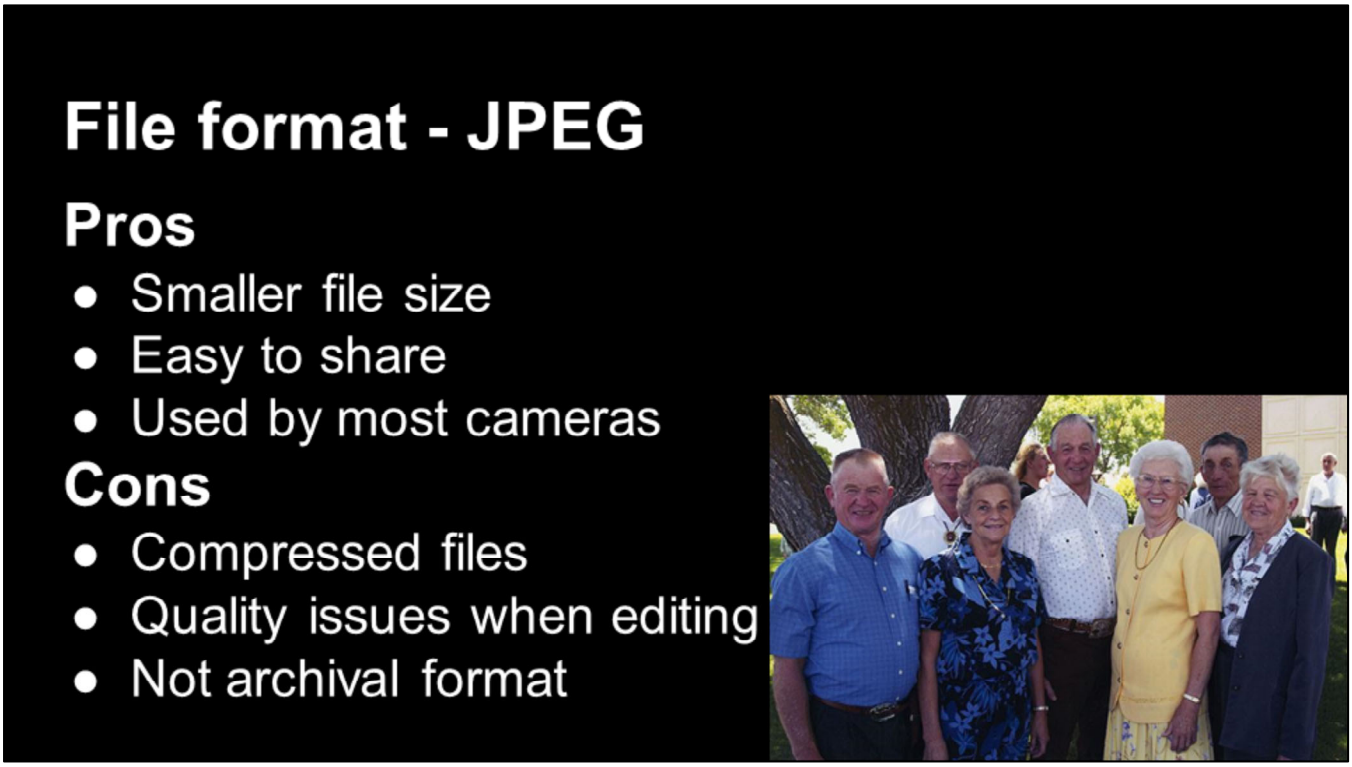


First TIFF.

TIFF images are considered a high quality archival file format.

The file is not compressed, meaning that it includes information about every single pixel in the image.

The downside to this is that the file size can be very large, making it difficult to open on some devices and not as easy to share with others.



JPEG images on the other hand have much smaller file sizes, making them easy to share with others.

A problem with JPEGs is that they are compressed, meaning that when the file is saved, not every pixel is represented.

Every time you save a JPEG, the quality decreases, so if you are editing a JPEG in Photoshop or another program, the quality will suffer each time you save the file.

Because of this, JPEGs aren't considered an archival format that will last for the long term.

File format - comparison of file sizes

600 ppi photo	TIFF	JPEG
3 x 5	15.8 MB	1-3 MB
8 x 10	84.4 MB	5-15 MB
11 x 17	198 MB	10-30 MB

This chart can help you see the difference in file sizes between TIFFs and JPEGs.

For instance, one of the photographs that I scanned for this presentation was an 8x10 photograph of my wife's great grandpa.

When I scanned this as a TIFF, the file size was around 85 MB. When I saved it as a JPEG, the file size went down to 7 MB.

When possible, I recommend scanning TIFF images, but you need to make sure that you have enough storage space on your hard drive or device to handle the larger amounts of data.

These were the five tips for scanning photos – equipment, resolution, bit depth, file naming, and file formats.

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